USGS Sediment Monitoring Activities in Illinois

BACKGROUND

Several water- and sediment-monitoring stations have been operated in Illinois by the U.S. Geological Survey, Water Resources Division, Urbana, Ill. (USGS) over the past several years. Some stations have as many as 17 years of continuous water-discharge and sediment record. However, water and sediment monitoring has been declining in recent years because of budgetary constraints of several agencies.

The sediment data at these sites are collected by a combination of samples by USGS and by local observers on contract with the USGS. All samples are collected according to methods accepted in the scientific community as the standard (Guy, 1970; Guy and Norman, 1970; Porterfield, 1972; and Johnson, 1996). The data are published in the USGS annual data report.

The stations that have recently been monitored by the USGS in Illinois are presented in table 1. Included in table 1 are the USGS station number and name, the period of record, and the calculated annual yield of suspended sediment.

Table 1.—Recent water- and sediment-monitoring stations in Illinois

USGS Station Number and Name	Period of Record	Yield (tons/mi^2/year)
05586100 Illinois R at Valley City	**1980- present**	**190**
05585000 LaMoine R at Ripley	1980-81, 1995-97	480
05583000 Sangamon R nr Oakford	1981-83, 1995-97	180
05570000 Spoon R at Seville	1995-97	640
05568000 Mackinaw R nr Green Valley	1995-97	330
05563800 Illinois R at Pekin	1995-97	100
05559600 Illinois R at Chillicothe	**1993-present (9-month site)**	**80**
05586685 SW Branch Dry Fork Creek nr Gillespie	1996-97	722
05520500 Kankakee R at Momence	1992-95	71
05525000 Iroquois R at Iroquois	1992-95	59
05526000 Iroquois R at Chebanse	1992-95	137
05527500 Kankakee R at Wilmington	1992-95	130
05548105 Nippersink Cr above Wonder Lake	**1994-97, 1999-present**	**57**
05548110 Nippersink Cr below Wonder Lake	1994-97	15
05548280 Nippersink Cr nr Spring Grove	1994-97	44
05546500 Fox R at Wilmot	1997-99	49
05547350 Fox R at Grass Lake	1997-99	51
05548500 Fox R at Johnsburg	1997-99	24
05416100 Mississippi R at L/D12	1995-97	34
05419000 Apple R at Hanover	1995-97	370
05420100 Plum R at Savanna	1995-97	222
05420400 Mississippi R at L/D 13	1995-97	47
05591200 Kaskaskia R at Cooks Mills	1979-97	172
05594100 Kaskaskia R at Venedy Station	1980-97	122
05599500 Big Muddy R at Murphysboro	1980-97	94
05588700 Judy's Br at Oak Lawn Estates	**2000-present**	**n/a**
05588710 Judy's Br Tributary at Glen Carbon	**2000-present**	**n/a**
05588720 Judy's Br at Glen Carbon	**2000-present**	**n/a**

SIGNIFICANT FINDINGS

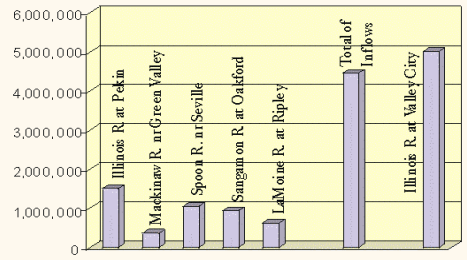
Many of these stations were operated to investigate specific problems. For example, the Fox Chain of Lakes stations were part of a USGS study which documented that one of the lakes in the Chain, Grass Lake, is no longer acting as a sediment trap. The Wonder Lake stations and Dry Fork Creek station were part of USGS lake studies. Finally, many of the stations were part of pool studies on the Illinois and Mississippi Rivers which provided very important data to Federal, State, and local officials (fig.1).

USGS science for a changing world

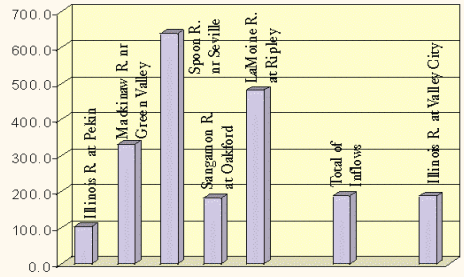
Suspended Sediment Transport, Illinois River, La Grange Pool, Oct. 1, 1994 – Sept. 30, 1997

By Gary Johnson, U.S. Geological Survey, Urbana, Illinois

	DRAINAGE AREA (in square miles)	WY95 LOAD (in tons)	WY96 LOAD (in tons)	WY97 LOAD (in tons)	YEARLY AVG. (in tons)	SEDIMENT YIELD (in tons/mi^2)
INFLOWS TO LA GRANGE POOL						
Illinois River at Pekin	14,585	1,213,782	1,416,795	1,884,803	1,505,127	103.2
Mackinaw River near Green Valley	1,073	618,153	302,393	146,628	355,725	331.5
Spoon River near Seville	1,636	1,383,378	1,026,100	721,146	1,043,541	637.9
Sangamon River at Oakford	5,093	1,231,423	1,055,732	509,526	932,227	183.0
LaMoine River at Ripley	1,293	708,384	797,804	362,235	622,808	481.7
TOTAL	**23,680**				**4,459,427**	**188.3**
OUTFLOWS OF LA GRANGE POOL						
Illinois River at Valley City	**26,743**	5,559,897	5,385,797	4,096,610	**5,014,101**	**187.5**



AVERAGE ANNUAL SEDIMENT TRANSPORT (IN TONS) OF MAJOR DRAINAGE AREAS IN THE LA GRANGE POOL OF THE ILLINOIS RIVER



AVERAGE SUSPENDED SEDIMENT YIELD (IN TONS/MI^2) OF MAJOR DRAINAGE AREAS IN THE LA GRANGE POOL OF THE ILLINOIS RIVER

USGS

Figure 1. Suspended-sediment budget for the LaGrange Pool of the Illinois River, 1994-1997.

PROBLEM

It is extremely important that a meaningful network of monitoring stations are maintained in the State to monitor trends and to manage resources with the best scientific data available (Integrated Management Plan, 1997). The amount of water and sediment that is delivered by Illinois rivers is affected by many natural and human factors that are constantly changing over time, especially considering the implementation of agricultural incentive-based conservation programs (such as CREP) and other Federal, State, and local attention to conservation. Long-term water- and sediment-monitoring stations in Illinois are crucial to evaluating the effects of these factors, and to evaluate the most critical parts of watersheds in Illinois.

CONTACTS

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